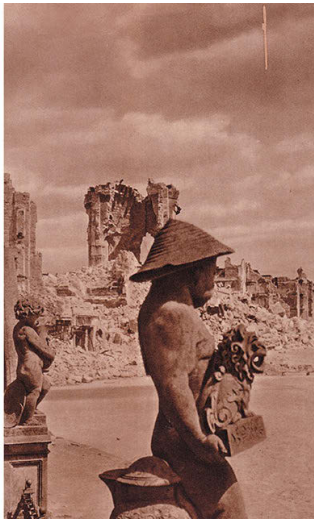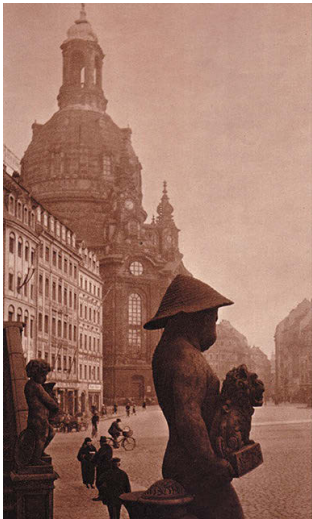INTRODUCTION

Dresden, view to the Frauenkirche before and after its destruction, 13–14 February 1945.[1]

History is increasingly presented as a series of catastrophes. The most common mode of this presentation is the before-and-after image – a juxtaposition of two photographs of the same place, at different times, before and after an event has taken its toll. Buildings seen intact in a 'before' photograph have been destroyed in the one 'after'. Neighbourhoods bustling with activity in one image are in

ruins or under a layer of foul water in the next. Deforestations, contaminations, melting icebergs and drying rivers are represented in paired images that purport to show the consequences of rogue development, resource exploitation, war or climate change. It seems that almost any photograph taken today has the potential to become a 'before' to a devastating 'after' yet to come.

The juxtaposition inherent in before-and-after photographs communicates not a slow process of transformation over time but, rather, a sudden or radical change. Forensic accounts, which seek to reconstruct what took place between the two moments in time, can sometimes involve intricate processes of interpretation that cross-reference before-and-after images with other forms of evidence. But more commonly before-and-after photographs are used to privilege a direct line of causality between a singular action and a unique effect. In before-and-after photographs, the event – whether natural, man-made or an entanglement of them both – is missing. Instead, it is captured in the transformation of space, thus calling for an architectural analysis. This spatial interpretation is called upon to fill the gap between the two images with a narrative, but that job is never straightforward.

The history of before-and-after images is as old as the history of photography. Indeed, they emerged from the limitations of the early photographic process. The few dozen seconds required for the exposure of a mid-19th-century photograph was too long a duration to record moving figures and abrupt events. The result was that most often people were missing from the image; only buildings and other elements of the urban fabric were registered. To capture an event, two photographs were necessary. The technique was thus useful in

representing the consequences of urban conflicts, revolutionary action and large-scale urban reconstructions. Because the event was registered only through changes in the environment, those studying the result of violence needed to shift their attention from the figure (the individual or action) to the ground (the urban fabric or landscape).
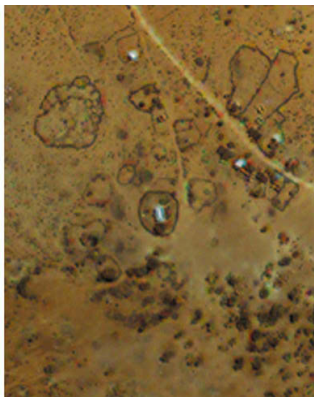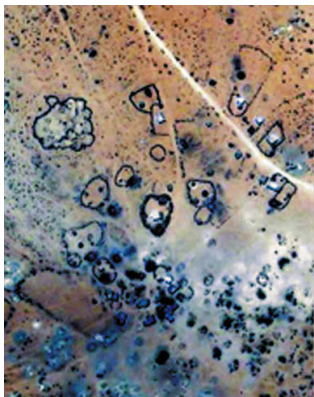
Senafe, Eritrea, 1999 and 2002. Before and after destruction by the Ethiopian army.
[2]
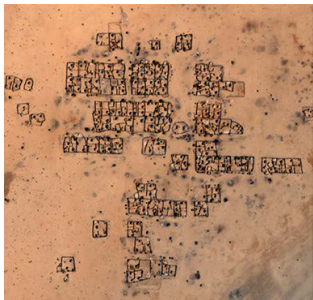
North Darfur, Sudan, 2003 and 2006.[3]

Today, the most common before-and-after images are satellite photographs, and they are once again the product of a limitation in the photographic process. The orbit times of satellites circumnavigating the planet means that they can only capture the same place at regular intervals. Because there is a time lag between each image (the fastest satellites can orbit the Earth every 90 minutes but at higher altitudes they take several hours), the crucial event is often missed. In addition, international regulations currently limit the resolution of publicly available satellite imagery to 50 cm per pixel (every 50 cm area is represented as a single, colour-coded surface). Higher-resolution images are available to state agencies, but the regulation limiting publicly available resolution was set so that they would not register the human body.[4]

Although this regulation was set because of concerns about privacy, it also has a security rationale. Not only are strategic sites

camouflaged by the 50 cm pixel resolution, but the consequences of state violence and violations become harder to investigate. In Israel and the occupied territories an even more severe limitation on the resolution of satellite imagery requires that providers degrade their image to a resolution of 1 m per pixel.[5] This has the effect, intended no doubt, of limiting the ability of independent organisations to monitor state action within that area. Whether politically or technically motivated, the fact is that the limitation on resolution means that, 150 years after the invention of photography, the original problem persists: people are still not registered in the kind of before-and-after photographs that most commonly document destructive events.

The contemporary prevalence of before-and-after images shapes our perception of the world. It certainly opens up a new dimension in shifting our attention from the representation of the human agent to representations of territories and architecture, which also turns spatial analysis into an essential political tool. However, the crucial thing in before-and-after images is the gap between them, and these gaps can resist easy interpretation.

In order to unpack the politics of before-and-after images, it is vital to understand their history.

Eugène Thibault, The Revolution of 1848, Before and After the Attack, 1848.[6]

Perhaps the earliest before-and-after photographs of an urban scene are a pair of daguerreotypes of the barricade in Paris's Rue Saint-Maur Popincourt. These were captured by Eugène Thibault from a hidden window, before and after a clash between workers and the National Guard led by General Lamoricière on Sunday, 25 June, 1848. Photography historian Marie Warner Marien has described the scene unfolding in this pair.[7] The 'before' image shows a sequence of two or three barricades that appear to have been assembled out of sand bags and cobblestones. Although the workers' neighbourhoods of the time were undergoing an unprecedented population explosion, we can

see no one in the street and no one manning the barricade. Are they hiding or are they moving too fast to be captured by the camera? The 'after' image is blurry. The National Guard seems to have broken through. Artillery and other military equipment have been positioned at the place previously held by the defenders. The workers were defeated, killed in battle, captured or executed, but the violence and confusion of the battle are missing.

Not only is the action within this pair of before-and-after photographs subject to interpretation, but the meaning of the pairing itself has also changed with time. When printed in August 1848, in the reactionary (and, later, collaborationist) Parisian weekly *L'Illustration*, it was meant to convey the state's warning to the workers: this will be your fate if you rebel! But we can now see it as a testimony to the revolutionaries' resistance as they started to transform our world.

Even the presentation of this most minimal of sequences – a sequence of only two images – calls to mind other cultural forms and human experiences. First, it made imaginable the possibility of moving images, a decade before the movie was invented. In this context it could also be understood as a kind of very early montage: a form of construction in which images are commented upon, not by words, but by other images. Second, in this, as in all before-and-after photographs, the absence of the event from representation might be seen as analogous to the effects of trauma on memory. Psychological trauma erases or represses precisely those events that were hardest for the subject to experience, and these gaps forever keep any recollection incomplete and indeterminate. Contemporary legal theory now treats these memory lacunae as evidence in their own

right – the very act of erasure is evidence of the trauma suffered by the subject. Similarly the gap between before-and-after images might also be considered as a reservoir of imagined images and possible histories.

Before-and-after photographs can also depict acts of destruction in a highly ambiguous way. For instance, the photographic sequence that began with Thibault and the breaking of the barricades was continued two decades later. The narrow streets and alleyways of the neighbourhoods that the workers of 1848 were trying to defend were largely destroyed in the 1860s and 1870s, as Georges-Eugène Haussmann carried out his rebuilding of Paris. This too would be captured by before-and-after photographs: for 16 years, beginning in 1862, Charles Marville, the official photographer of Paris, positioned his camera along the paths that Haussmann's avenues and vistas would cut before, during and after their destruction and reconstruction. Marville's images of the transformation of Paris were long misunderstood to be simply a nostalgic representation, a lament for the destruction of 'old Paris'. This assumption has been proven wrong by art historian Maria Morris Hambourg. Undertaking a forensic-like investigation, Hambourg located the points from which these photographs were taken. She plotted their locations on maps of both the old and the new Paris, demonstrating that Marville used Haussmann's plans to decide where to place his camera and how to compose his images.[8] She writes: '… just as Haussmann pencilled his straight boulevards across the Byzantine topography of Old Paris, so Marville worked along the path of the projected streets, photographing whatever would be levelled to make way for them ....

Marville's pictures cut through the urban fabric almost as ruthlessly as Haussmann's pick-axe teams.' [9] Marville's work was complementary to Haussmann's plans. Indeed, his deliberately bleak views of uneven, curved streets with cobblestones and dilapidated houses would not have aroused feelings of nostalgia in the 19th century. The images he created describe a pre-modern urban scene – condemned precisely because it was blocking the path to modernisation – in order to juxtapose it with the idea of the modern, convenient, efficient and hygienic city of the future, all constructed *ex-nihilo* in the gap between the two pictures. The 'gaze' that Marville captured in his photographs turned the present into the future long before anything was actually destroyed and rebuilt.

Roger Fenton, The Valley of the Shadow of Death, 1855. With (left) and without (right) cannonballs.[10]

Sometimes the question in before-and-after images is which is which. In her celebrated book, *Regarding the Pain of Others,* Susan Sontag discussed a photograph titled *The Valley of the Shadow of Death*, taken by English photographer Roger Fenton in 1855 during

the Crimean war. In the photograph, which she claims is the first photograph of war, a roadway in a valley leading to Sebastopol is thickly scattered with cannonballs.

Referring to another photograph by Fenton of the same site from the very same perspective but without the cannonballs on the road, she explained that 'many of the canonical images of early war photography turn out to have been staged, or to have had their subjects tampered with. After reaching the much-shelled valley approaching Sebastopol in his horse-drawn darkroom, Fenton made two exposures from the same tripod position: in the first version of the celebrated photo… the cannonballs are thick on the ground to the left of the road, but before taking the second picture – the one that is always reproduced – he oversaw the scattering of the cannonballs on the road itself.'[11]

In 'Crimean War Essay', the first chapter in his polemical book *Believing is Seeing*, Errol Morris sets out to prove Sontag wrong, or at least to challenge the ease of her assumption that the photograph with cannonballs on the road was taken *after* the one in which the cannonballs are to the side of the road. If Sontag's assumed order is wrong and the photograph with the cannonballs on the road was the first image, Morris claims, Fenton might have just cleared the road to allow his carriage to drive through.

To establish the temporal order in this pair of before-and-after photographs Morris travelled to the Crimea, where he searched for and found the exact perspective of Fenton's shot. Establishing the geographical orientation of the photograph, he tried to calculate from the shadows on the balls which image was taken first, but this

proved impossible. He zoomed ever closer into the image, eventually finding a solution, of a sort, in the movement of little stones in the vicinity of the balls.

'When the rocks are uphill,' Morris concluded, 'the cannonballs are off the road. Then, you look at the rocks after they have been dislodged – rocks that were kicked and then tumbled downhill – the cannonballs are on the road… It is the laws of gravity that allow us to order the photographs.'[12] Despite the conclusion of the essay, in which Morris confirms the assumption he set out to question, the obsessive account of his investigations leave no doubt that the order of the sequence of before-and-after images cannot be taken for granted.

THE VERTICAL GAZE

It was the demands of criminology that shifted the direction of before-and-after photographs from the horizontal to the vertical. In the first decade of the 20th century, Alphonse Bertillon, a French police officer who invented such modern forensic techniques as the mug shot, conceived of a special contraption that he called the *plongeur* (diver in French). The *plongeur* consisted of a horizontally-facing camera that photographed the mouth of a periscope-like-structure, which directed the camera's gaze up to the top of a high tripod and then down again, affording a bird's-eye view of the crime scene. Bertillon thought that this vertical perspective avoided any of the preconceptions of subjectivity or positioning.[13]

Half a century later it was this perspective, taken from heights newly achievable by the aeroplane, that would document the annihilation of cities from the air by explosives, fire or nuclear bombs. In 1972, with the launch of Landsat 1, the first of NASA's earth observation satellites, a scale of environmental destruction well beyond the urban could be observed, gradually turning the entire planet into a site of forensic investigation.
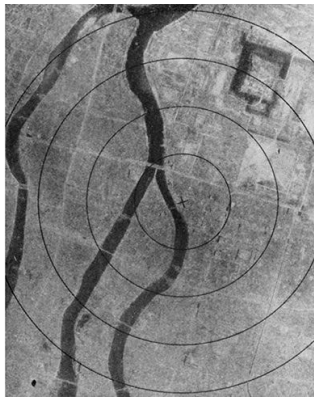
Hiroshima before and after bombing on 6 August, 1945. The area around ground zero is marked with circles at 300 m intervals. [14]

In her masterful book *Close Up at a Distance,* Laura Kurgan discusses the ways in which satellite vision technologies have created a radical shift in our ability to 'use the spatial realm as a political, human rights and military reference point'.[15] Although satellite photographs are generally presented and seen as apolitical or neutral 'views from nowhere', they are in fact highly political products of Cold War-era surveillance technologies and other state logics.

Satellites, orbiting above the altitude of state sovereignty but able to see deep into it, are now a technology closely associated with the protection of human rights. For it is precisely the extraterritorial dimension of outer space (whose threshold is defined as the lowest

possible satellite orbit) that makes satellite surveillance attractive not only to spy agencies undertaking reconnaissance missions but also to the international organisations and human rights groups who try to hold states to account.

Andrew Herscher importantly suggested that the fact that these surveillance technologies are used equally by militaries and human rights organisations is not without its dangers.[16] The Kosovo War at the very end of the 20th century was the first war in which human rights violations – those of the Serbian side, to be precise – were the justification for military action and thus the target for satellite reconnaissance by the US and its NATO allies. In this historical conjunction, human rights concerns and military ones were entangled, paving the way for further military actions (or threats thereof) articulated on human rights grounds in other conflicts worldwide.[17] Satellite images – purporting to show damaged, destroyed or cleansed villages and towns – presented in before-and-after pairs have become a call to action.

But Kurgan successfully demonstrates the ways in which satellite photographs – like any photographs – are open to different interpretations that cannot be controlled or contained by the state, and in fact can also be turned against it. The aerial perspective does not resolve the inherent ambiguities built into these photographs. Her book warns against the temptation of easy interpretation, of attributing to these images the power of conclusive truth beyond the need for serious interpretation. Rather than retreat from using this technology, Kurgan's work seeks to demonstrate ways to intensify the

study and interpretation of these images, and to offer more creative ways of politically mobilising them.

Indeed, although satellite images are most frequently used by state and corporate agencies, in recent decades the practice of satellite image interpretation has helped transform the human rights movement from an advocacy-based practice to an investigative one that seeks to hold states accountable. Moreover, thanks to the wide availability of satellite imagery, even private individuals can now monitor the actions of, say, the US military. For example, browsing Google Earth, the Italian aviation blogger David Cenciotti spotted six US F-15 fighter jets parked at a newly constructed section of the Djibouti International Airport in October 2011, confirming that the Pentagon was waging a secret war in Yemen and East Africa. In other words, forensics is now being crowd-sourced.

The international airport of Djibouti, as seen through the Historical Imagery function of Goggle Earth, April 2009 and October 2011.

Satellite images shift the attention of human rights analysis from figure to ground – from the human to the environment. So how can human rights violations be seen without the human body represented? At a resolution of 20 m per pixel, as Kurgan has explained, human

rights violations begin to be recognisable as environmental transformation: one can see, for example, the traces of mass graves in agricultural fields, but buildings and neighbourhoods are captured as an undifferentiated mass. At the resolution of 50 cm per pixel – which is how most satellite images are made available – details come into view. Individual buildings and building parts can be identified, opening the possibility of architectural analysis. This interpretation resembles an act of archaeology. But this is an archaeology of the present. It does not consist of an earthly, material excavation of a distant past. It is rather an architectural reconstruction based on an analysis of images and the ways these images are composed in pixels.

Before Image, January 23rd 2011

Possible Impact Craters

After Image, April 5th 2011

Forensic Architecture and Situ Studio analysis of drone attack on a civilian gathering in Datta Khel, Waziristan on 17 March 2011.[18]

March 30th 2012 Miran Shah Drone Strike
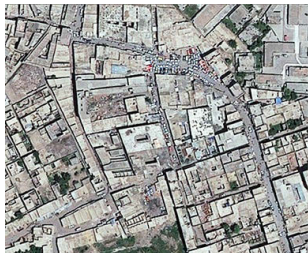
Before image (March 12th 2011)   After image (May 13th 2012)

Forensic Architecture and Situ Studio destruction of a weapons bazaar, most likely by the Pakistani military, Miran Shah, Waziristan, April 2011.[19]

Forensic Architecture, the results of an American Strike in Yemen, 14 July 2011[20]

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